# Introduction to the Milwaukee County *Interactive Mapping Service*
## Version 1.5.1

## 1) GIS Basics

### 1a. Introduction to GIS

Web-based maps have many similarities to traditional paper maps, with some important differences. Instead of just looking at the map, you can explore vast amounts of information for a geographic area far-out or close-up, and learn more about specific features (mapped trees, streets, rivers, etc.), and get answers to your questions.

Web-based mapping technologies translate complicated GIS technology into a form that can be used by ordinary people around the world to explore geographic information like never before.

This short tutorial will provide you with the knowledge you need to successfully work with Milwaukee County's *Interactive Mapping Service* even if you have no prior knowledge of Geographic Information Systems (GIS).

Once you've read through the introduction, you'll be able to start exploring the *Interactive Mapping Service*. Spend a few minutes reading through the Tools and Tasks section to familiarize yourself with some of the more advanced operations at your fingertips. You'll quickly see how easily these tools can get you answers to some surprisingly sophisticated geographic questions.

**1b. Key GIS Concepts**

GIS Concept #1: Features have attributes associated with them

Imagine a tree. How would you keep track of and communicate information about this tree to other people who need to know all about it? You might use a database to keep track of what species it is, how old it is, how tall it is, how healthy it is, and any other attributes (characteristics) that are important. This tree is one record in a database. We call each category (i.e. tree height) a field**.**

Figure 1. Sample Record in a Database

| ID: | Type: | Age: | Height: |
|-----|-------|------|---------|
| 12  | Cedar | 110  | 67'     |

Now imagine a grove of trees for which you need to keep track of attributes. Because we are now dealing with more than one tree, it becomes relevant where each tree is so we know what information relates to which tree.

Figure 1a. Database with Multiple Records

| ID: | Type:  | Age: | Height: |
|-----|--------|------|---------|
| 12  | Cedar  | 110  | 67'     |
| 13  | Pine   | 135  | 80'     |
| 14  | Spruce | 120  | 72'     |
| 15  | Cedar  | 120  | 70'     |
| 16  | Spruce | 105  | 65'     |
| 17  | Pine   | 115  | 75'     |

We map the location of each tree and identify which attributes belong to which tree. This is the foundation of GIS. A GIS tells us *where* something is and what it is, and can have hundreds of fields (different attributes) for millions of records (trees).

Figure 1b. Mapping Locations
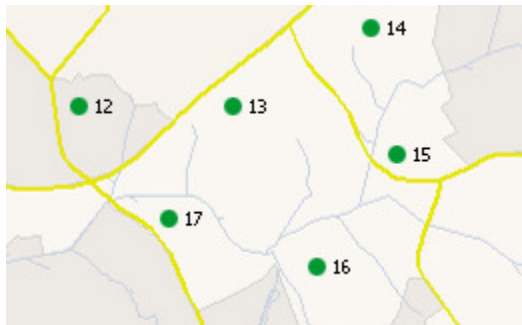


You will be able to examine the attributes of various features as you use the Milwaukee County *Interactive Mapping Service*.


GIS Concept # 2: Information is separated into layers
We can also have other layers of information in our GIS. Our information on trees would constitute one layer of information. We could also have a layer with rivers and a layer with soil types (Figure 4). Any information can be represented as a layer.

A map represents the landscape in an artificial way. Vector layers represent features in one of several ways:


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**Points**
A point is good for representing information in which it is necessary to show where a feature is, but its physical shape is not important (i.e. trees in the old growth tree layer).

**Lines**
A line is suitable to represent many real world features (i.e. the rivers in the river layer).

**Polygon**
A polygon is an area enclosed by a multi-sided shape. When you see a polygon, remember that everything inside the boundary has the attributes associated with the record (i.e. soil types in the soils layer).

You might hear people talk about *coverages*, *themes*, feature classes, or *shapefiles*. All these terms are other names for layers of information.

Figure 1c. Vector Layers
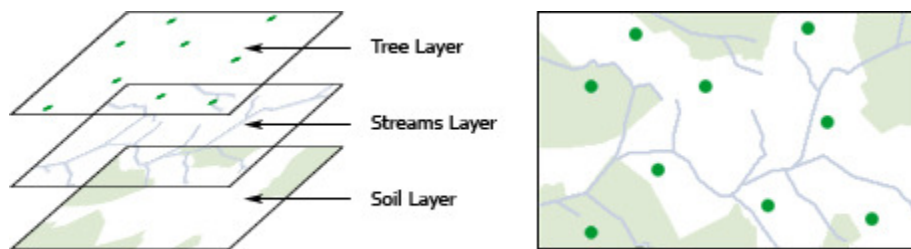


Sometimes a layer of information can be a raster layer, which is a grid that contains information. Rows and rows of pixels make a grid. If you see a photo from above on a web-map, it's a raster layer. In fact, this is how all digital camera Images are stored. Raster layers don't have attributes associated with them like vector layers, though they all contain pixel values. That single value might be the color of a roof tile, or it might be a measure of hurricane force for a location, or just about anything else.

Figure 1d. A Raster Layer (left) contains pixel values (right)
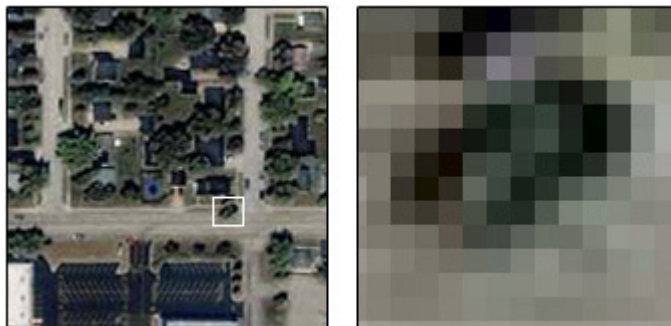


With individual layers we can conduct analysis between layers or, for example, only display layers that are of interest to us. As you work with the *Interactive Mapping Service* maps, you will be able to turn different layers on and off.

## 2) Basic Map Navigation

### 2a. Getting Started

Figure 2-1 shows what you will see when you open the *Interactive Mapping Service* in your Internet browser (Internet Explorer, Firefox, etc.).

The map information is displayed in the Map Window (1). Beside it is the Information Panel (2), which displays information about the map and lets you do interesting things with the map. Specifically, the Information Panel displays the Overview Map and Layer List, as well as Selection Results and interfaces for various tools and processes.

At the top of the viewer you can see the Toolbar, where you'll find tools that will help you use your map. These tools will allow you to navigate around the map, query features (ask questions about the objects visible in the map), and otherwise interact with

the information. Scale Information and map coordinates are found at the bottom of the Map Window.

Figure 2-1:  The Milwaukee County *Interactive Mapping Service*
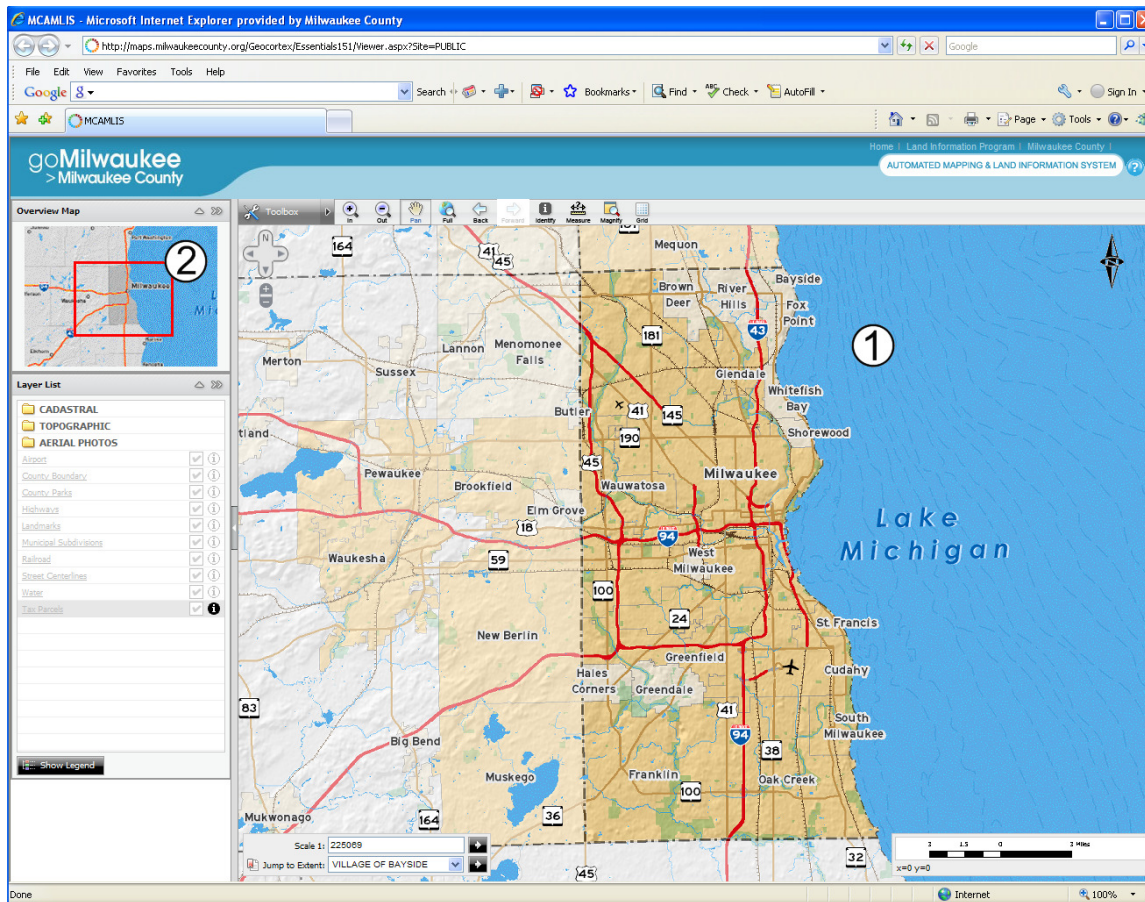


## 2b. Navigating Around the Map

Pan Tool



The Pan tool lets you move around to different parts of the map. With the pan tool, whatever part of the map you "grab" when you click your mouse button will be where you end up when you let go of the mouse button.

Alternatively, you can click on the Navigation Control (located at the top-left edge of the map window) to pan without switching to the Pan tool. Single-click on a directional arrow to incrementally shift the map in that direction. You can also press and hold the mouse button on the navigation control and move the mouse over different directional arrows to navigate around the map. To stop scrolling, just release the mouse button.

Zoom Tools



The Zoom tools are unique to digital maps. They are very much like using an actual magnifying glass, as the icons imply. The magnifying glass button with the plus sign lets you 'zoom in,' while the one with the minus sign lets you 'zoom out.' There are a couple of ways to use these tools.

First, click on one of the magnifying tools to select it, then go somewhere on the map and press the left mouse button. With the Zoom In tool, the map zooms in. The center of the new map is wherever on the map you clicked the mouse button. The Zoom Out tool zooms out the same way.

Second, you can use the Zoom tools more precisely by pressing the mouse button somewhere on the map, holding it down, and dragging a box. When you let go of the mouse button, the new map extent will be the area defined by the box. Whether you are zooming in or out, the area defined by the box will become the new map extent. When you zoom in, the scale of the map increases (i.e. it gets larger). A large scale map covers a smaller land area (or "extent") than a small scale map. For instance, a map that is zoomed in to Hales Corners is at a larger scale than a map of Milwaukee County.

Scale is a ratio. In other words, 1:10 means that one unit on the map represents ten units in the real world. In this case, the map is one-tenth the size of the real world. Because it is a ratio, it doesn't matter if the units are centimeters, miles, or any other units. If you have a 1:100 000 map, the map is 1/100 000 the size of the actual place. And if we remember our grade school math, 1/100 000 is a much smaller fraction (or ratio, or scale…) than 1/10.   Basically, all you have to remember is this:  larger scale equals greater detail.

Zoom to Full Extent Tool



The Zoom to Full Extent tool is a quick and easy way to zoom out as far as possible. Just click on the tool and the map will zoom out to its maximum extent.  You can also zoom in and out using preset increments by clicking the plus or minus signs in the Navigation Control (Fig. 3-3) located in the upper left corner of your Map Window.

Scale and Jump to Extent

Another method of zooming uses the Scale Box (Figure 2-2) displayed at the bottom of the Map Window. The current map scale is always displayed as a ratio in this box. To change the scale, enter the desired ratio and press 'Go.' This is a quick way to automatically zoom directly to the scale you need.  Also, the Jump to Extent tool in the

Scale input box allows you to automatically pan and zoom to the extent of one of Milwaukee County's 19 municipalities.

Figure 2-2. The Scale Input Box and Jump to Extent
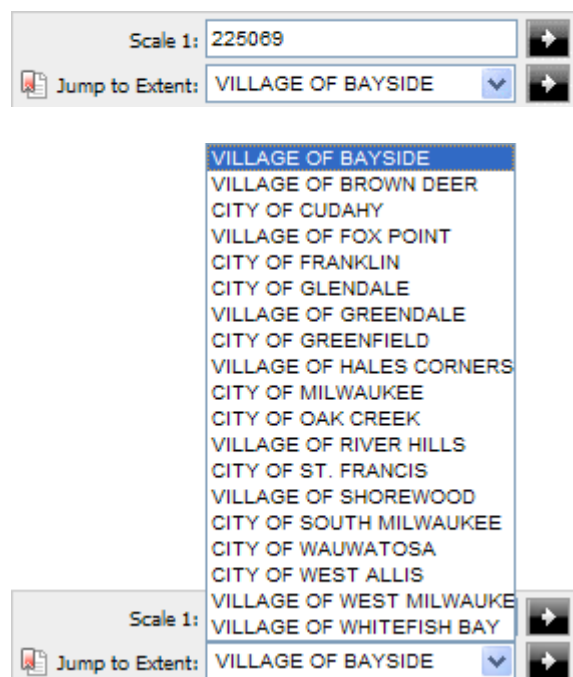


Along with the Scale Input Box, there is also a Scale Bar (Fig. 2-3) for estimating distances at the bottom of the Map Window.

Figure 2-3: The Scale Bar



Please note that the Scale Box and Scale Bar are for map navigation only, and are not necessarily accurate. Without information about the size of your monitor or display device, it is impossible for us to accurately provide a ratio scale. An error will be most pronounced if you are operating a large monitor (or a projection device) running at a very low resolution, or if you are running a small monitor at a very high resolution. A 17" monitor running at a resolution of 800x600 or 1024x768 is much better represented by the denoted ratio scale.

Some maps have limits on the scales at which you can view the data, and some layers and/or map labels may only appear at certain scales. If the layer you need is unavailable at your current map scale, change the ratio in the Scale Box until the layer becomes available, or click on the layer name and select "Zoom to visible scale."

Fig. 2-4: Overview Map
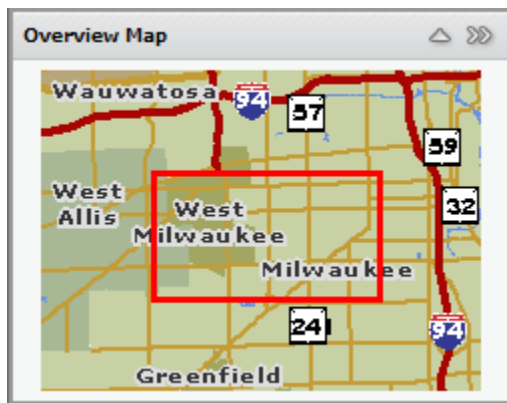


The overview map, located at the top of the Information Panel, provides another way of navigating around the map after you have narrowed down your area of interest and desired scale. If the Overview Map is not visible, click the arrow on the right side of the grey Overview Map bar.  The box outlined in red represents the extent of the portion of the map that is visible in the Map Window.  By grabbing the outline of the red box, the view in the Map Window re-centers on the area selected in the Overview Map.


**2c. Layers: Turning Layers On & Off and Make a Layer Active**

Because many layers are available in the map, some layers are organized into related folders on the Layer List (Fig. 2-5); if you don't see the Layer List, click on the arrow on the Layer List bar in the Information Panel. When you open a map, some folders may be open and some may be closed. Likewise, some layers may be turned on while others may be turned off by default.

To manually set the display of layers, you can open a closed folder by clicking on it. A list of all the layers contained within the folder will be shown. Similarly, you can click on an open folder to close it. Notice that opening and closing folders doesn't turn layers on or off; it simply helps you stay organized.

Next to each folder you will see a checkbox which indicates whether or not a layer is visible on the map. A layer is 'on' (displayed on the map) when there is a check in the checkbox. Toggle individual layers on and off by clicking an empty box to make the layer visible, or clicking a checked box to hide the layer.

Figure 2-5: The Layer List
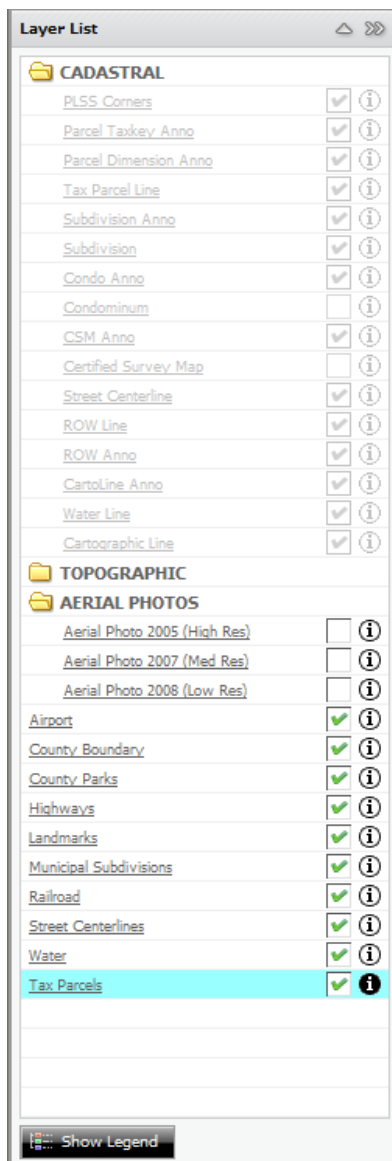


Making Layers Active

Some layers are only available at certain scales. Layers that are available at your current scale will be shown with a white identify icon (Figure 2-6) next to the layer name, while layers that are unavailable at a given scale are shown with a grey identify icon (Figure 2-6) next to the layer name. A layer can be made 'active' by clicking on the white icon adjacent to its name. A black identify icon (Figure 2-6) will denote the active layer, and its name will be highlighted in blue in the Layer List. When a layer is active, features from that layer that are visible in the Map Window may be identified and selected.

Figure 2-6: Available Layer (white), Active Layer (black), and Unavailable at current scale icons (grey)



## 2d. Identifying Attributes of Features

As discussed in the Introduction to GIS, features (such as rivers or subdivisions) have attributes associated with them. Suppose you are interested in the attributes associated with a piece of real estate in a particular location to which you have zoomed. First, ensure that the "Tax Parcels" layer is the active layer (see Making Layers Active for more information).

Next, use the Identify tool to get attribute information about the parcel by clicking on it. Select the Identify tool whenever you want to examine the attributes of a feature on the map.

## 2e. Viewing the Map Legend

In addition to the functions above, the Layer List can also display a Map Legend. To make the legend visible, click on the 'View Legend' button at the bottom of the Layer List (Figure 2-7). To hide the legend, click the 'Hide Legend' button. Legend symbols will only be visible for layers that are turned on.

Figure 2-7: Activated Layer List Legend

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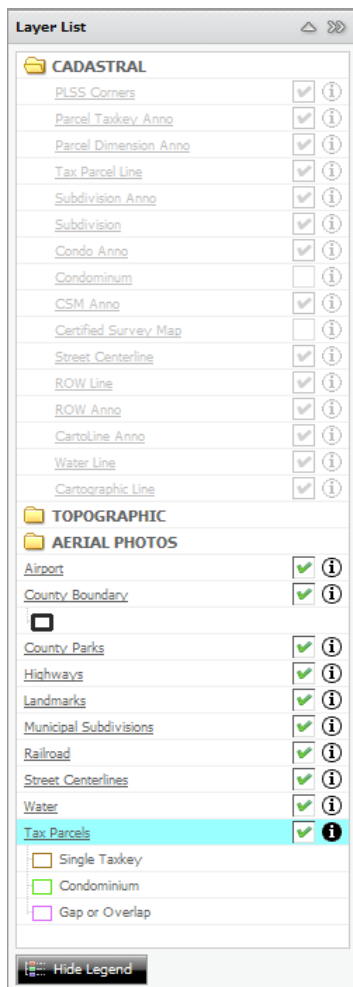
Next, this tutorial will show you how you can draw on and add your own things to a map, create your own custom maps as PDF documents (which you can save and/or print), measure distances, select features based on various criteria, search for features, and more.


## 3) More Advanced Functions

### 3a. Tools and Tasks

This section will introduce you to the different tools and functions available with the *Interactive Mapping Service*. Please note that some tools may not be available with the general-access Public Viewer (see Fig. 3-1).


The Toolset Menu

The Toolset (Fig. 3-1) contains a number of Toolbars that display various tools that are available for interacting with your map. A Toolbar (found in the Toolset) is where all the tools and functions are organized. Click on the Toolbar to choose the specific set of tools you want to have displayed in the Toolbar.

Figure 3-1: The Toolset menus

**SECURE VEWER**     **PUBLIC VIEWER**
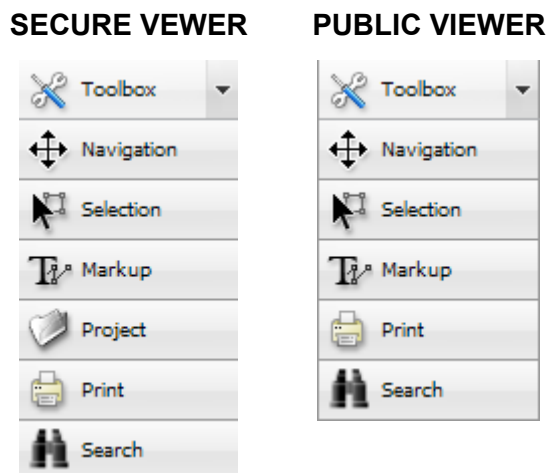


3b. The Navigation Toolbar



The Navigation Toolbar allows you to move around the map, zoom in and out, measure and magnify features on a map. The Navigation Toolbar is where you'll find the following resources to help you find your way around the map and perform measuring and magnifying operations:

Zoom In



Use the Zoom In tool to click on a certain location on the map to zoom in. Or, click and hold the mouse button to drag a box that will define a particular zoom extent.

Zoom Out



To zoom out on a map, select the Zoom Out tool. Define the extent of the area that you wish to zoom out to by clicking on a location or by dragging a box to define a particular zoom extent.

Figure 3-3: Navigation Control



To change the map's scale (zoom in or zoom out) without using the Zoom tools, click on the plus or minus signs of the navigation control (Fig. 3-3) that is located in the upper left corner of your Map Window.

Pan



The Pan tool lets you navigate around the map. Use the Pan tool by clicking and dragging the mouse on the map to reveal different areas. The area of the map that you grab will end up wherever you release the mouse button. For example, if you want to move North (up the map), click and hold near the top and drag the map down. Alternatively, you can use the Navigation Control located in the upper corner of the Map Window (Fig. 3-3) to pan without switching to the Pan tool. Single-click on a directional arrow to have the map shift incrementally in that direction. You can also press and hold the mouse button on the Navigation Control and move the mouse over different directional arrows to navigate around the map. To stop scrolling, just release the mouse button.

Zoom to Full Extent



The Zoom to Full Extent tool tool is a quick and easy way to zoom out to the fullest extent possible. Just click on the tool and the map will zoom out to its maximum extent. This is especially useful when you want to start fresh without losing the changes you made to the map.

Identify



Choose the Identify tool to select a feature and see a list of its attributes. Once the layer you are selecting features from is active, click on the feature you want information about. An attribute report with additional options will appear (Fig. 3-17a).
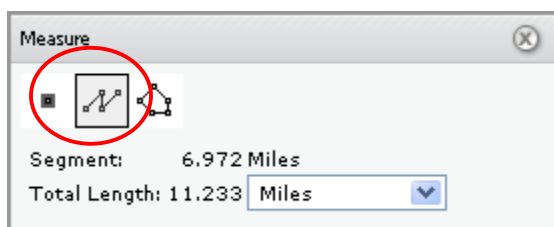
Measure



The Measure tool allows you to measure points (coordinates), lines (distances), and polygons (areas) on your map. There are three types of measuring tools available in the Measure dialogue box:

1. Return a Location's Coordinates
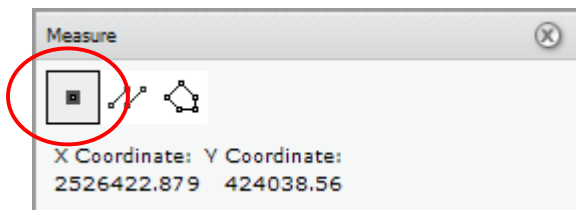


The Measure Coordinates map function allows you to click on the map to return the coordinate location of a particular point. The State Plane coordinates (Wisconsin South Zone 4803) of the selected point will be displayed in the Measure Window.

2. Measure Distance



The Measure Distance map function enables you to measure distances on the map. You can measure the distance between two locations, or you can measure the total distance of a route with multiple stops. Click on the desired starting point and add another node by clicking on a different location to complete one line segment. Double-click to end the line.  The distance between the two nodes will be shown in the Measure Window, along with the total length of the line. If you are interested in the length of a line with multiple stops (more nodes), simply keep adding nodes. The segment length shown will always refer to the most recent segment. To change the unit of measurement, use the drop-down menu in the Measure Window.

3. Measure Area
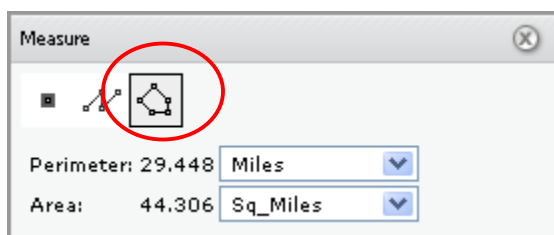
The Measure Area tool lets you calculate the area inside of a polygon. Use the Measure Area tool to define the vertices (corners) of a polygon by clicking on the map. The tool requires that you specify a minimum of three vertices before an area can be calculated. Add as many vertices as you need to accurately represent the area you want to measure. The calculated area is returned in the Measure Window along with the perimeter of the polygon. If necessary, change the unit of measurement with the drop-down menus provided.

Magnify



When you click on the Magnify tool, a magnifying window (Figure 3-4) will appear on your map. Click and hold the mouse on the grey bar at the top of the Magnifier to drag the window over a desired location. You can change the degree of magnification by using the drop-down menu at the bottom of the window. Note that when you change the magnification, the current map is not simply enlarged. Rather, new map data is retrieved and displayed, sometimes displaying features or labels that weren't visible at the smaller scale.  Map features and labels are often set to appear differently at different scales to maximize readability and to enhance map appearance.  Features and their labels may be visible or invisible, or may have varying symbology (colors and styles of outlines, fills, points, etc.) at different scales.  In other words, the magnifier window displays features in the way they are meant to be displayed at the magnifier window's scale, not at the map window's scale.

Figure 3-4:  Magnify Window



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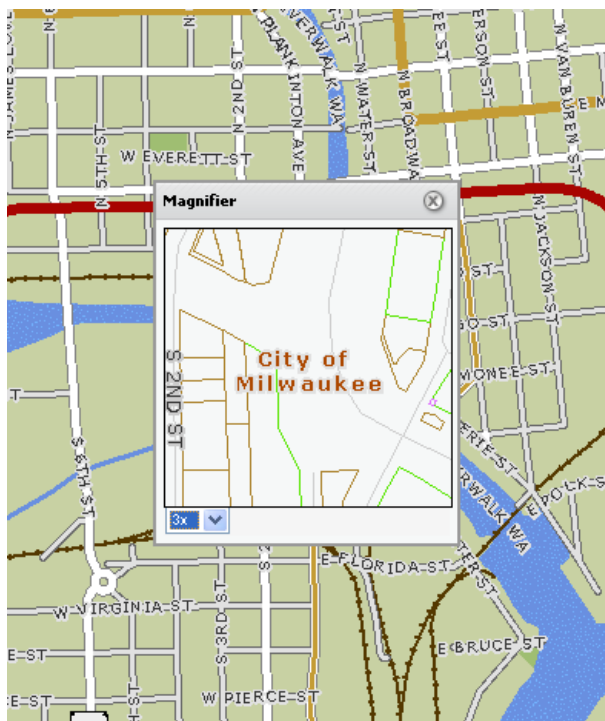
Map Back



Clicking on the Map Back tool will return your map to the previously defined visible extent. For example, a user who is currently viewing the map extent at a scale of 1:250000 zooms into 1:100000, clicking the Map Back button will return the user to their previous scale (1:250000).

Map Forward



If you have used the Map Back button, clicking on the Map Forward tool will return the map to the next defined visible extent.

## 3c. The Selection Toolbar



The Selection Toolbar provides tools for selecting and identifying various features on your map. There are a number of Select Feature tools that provide you with different ways of creating collections of map objects, or 'selection sets.' Choose the tool from the list of options below that will allow you to select your map objects in the easiest or most accurate way. Once you have selected features using one of these tools, you can see attribute reports and take advantage of additional options available in the Selection Results window (Fig. 3-17).

Select by Point



Select single features with this tool by clicking on the map in a particular location.

Select by Polyline



Use this selection tool to select a group of features from the map. Click on the map to start your polyline. Click again wherever you want to add a node and change the direction of the line. Double click to add the final node and complete the line.

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Select by Polygon



 A polygon is drawn like a polyline. Click on the map to mark the start/end point of your polygon, click again anywhere you want to add a node, and double click the last node to finish.


Select by Rectangle



Click and hold the mouse button to mark the upper left corner of your rectangle. Drag the mouse to size your rectangle and release when done.
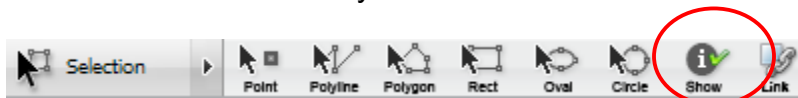Select by Oval



Click the mouse on the map to start your oval and move the mouse to resize. Click again to complete your shape.


Select by Circle



Click the mouse to mark the center of your circle. Move the mouse to resize your shape and click again to finish.


Show Selection Summary



The Show tool displays a summary of all the selected features in the Selection Results window (Figure 3-17).


Hyperlink



The Hyperlink tool offers the ability to associate a layer's spatial data with links to external data, such as web pages and documents. Once the tool is selected, click on a

point on the map to search for existing feature links. The Feature Hyperlinks window will display the list of available feature links for the layer that you queried.

Figure 3-5: Selection Results Options
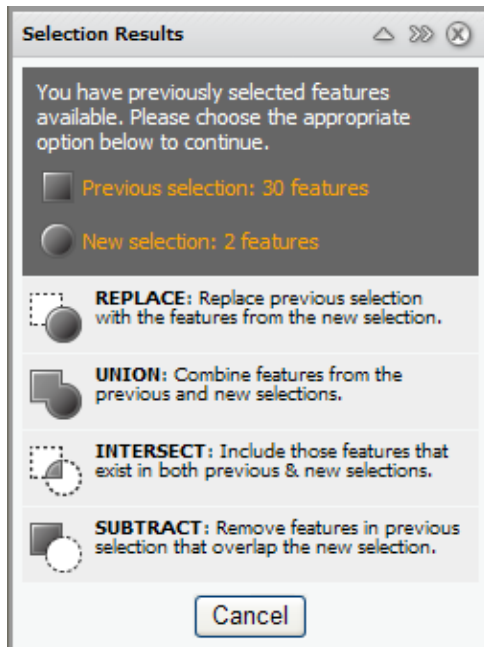


Each time you select a group of features, a "selection set" is created. If you select additional features when a selection set (or a group of selected features) has already been created, options appears in the Selection Results Window (Fig. 3-5) to give you control over how your new selection set will interact with the existing selection set.

**3d. The Markup Toolbar**



The Markup Toolbar allows you to add points, lines, areas and text to your map. There is a separate tool for each type of shape, and many options for changing the properties of your markup (e.g. fill type, color, transparency, line width).

Point Markup



To add points to your map, click on the Point Markup tool in the toolbar and define the appearance of your point from the Point Markup menu (Figure 3-6) that appears in the Information Panel. When you have defined your point, click on the desired map location and a

Figure 3-6: Point Markup Menu Options
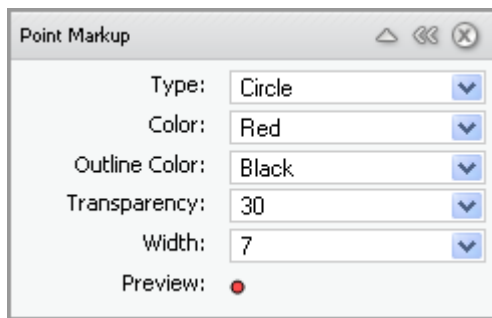


## Polyline Markup
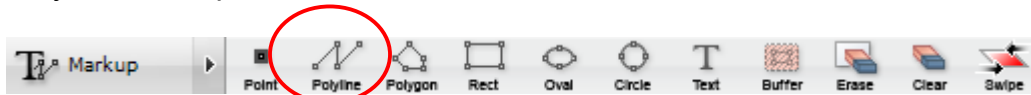


Draw a line on your map by selecting the Polyline Markup tool. Define the appearance of your line from the drop-down menus in the Polyline Markup menu (Fig. 3-7), and then click on the map to mark a starting point for your line. Move the mouse begin drawing and click wherever you want to add a node to your line and begin a new segment. If you make a mistake, right-click to undo the previous node.  Double-click to add the final node and complete your line.

Figure 3-7: Polyline Markup Menu Options
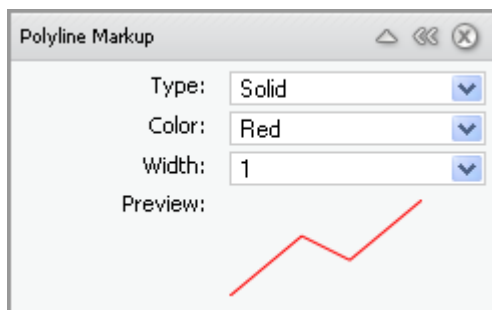


## Polygon Markup



To draw a polygon with 3 or more sides, select the Polygon Markup tool and choose the attributes of your polygon from drop-down menus in the Polygon Markup menu (Fig. 3-8). Click once on the map to mark a start/end point for your polygon. Next, add at least 2 more points by clicking on the map in the desired locations. If you make a mistake, right-click to undo the previous node.  Double-click to draw your last node and finish the polygon.

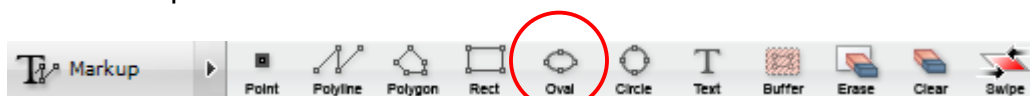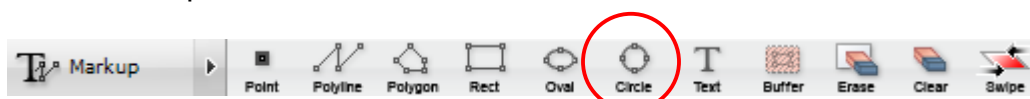Figure 3-8: Polygon Markup Menu Options
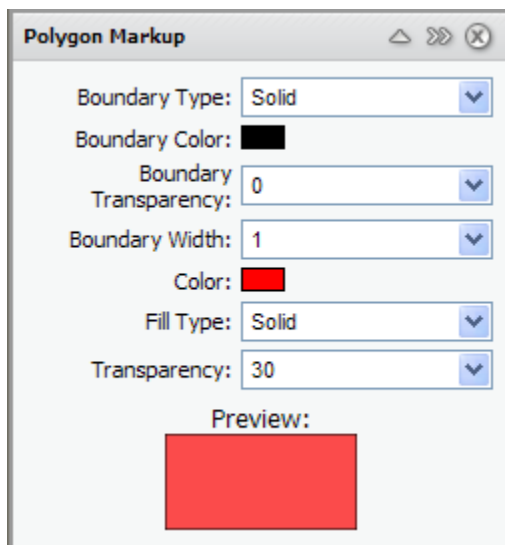


## Rectangle Markup



To add a rectangle to your map, select the Rectangle Markup tool and choose the attributes of your shape from the options provided in the Rectangle Markup menu (similar to the Polygon markup menu in Fig. 3-8). To start and position your rectangle, click and hold the mouse button down on the desired map location. Drag the mouse to size the box and release the mouse button to complete the rectangle.

## Oval Markup



Draw an oval on your map using the Oval Markup tool. Select the tool and choose the features of your shape from the options in the Oval Markup menu (similar to the Polygon markup menu in Fig. 3-8). Click on the map to position the corner of your oval and drag the mouse in any direction until you reach the desired size. Click again to complete the oval.

## Circle Markup



To create a circle, choose the Circle Markup tool and select attributes from the drop-down options in the Oval Markup menu (similar to the Polygon markup menu in Fig. 3-8). Next, click the map to set the center position of your circle. Move the mouse

away from the point to enlarge the circle and towards the point to shrink it. To complete the shape, click the mouse again.


Text Markup



The Text Markup tool allows you to add text directly to the map. Select the Text tool and format your text with the font and style options provided in the Text Markup menu. Click the location on the map where you want your text to begin and type within the text box. Press 'OK' to finish and add the text to your map, or press 'Cancel' to start again.


Figure 3-9: Text Markup Menu Options
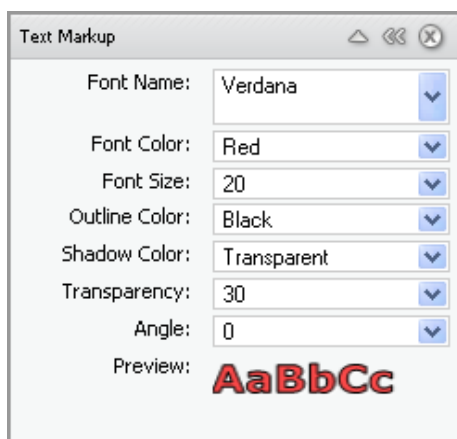



Buffer Markup



Use the Buffer Markup tool to create buffers around shapes drawn using the Markup tools. Once the Buffer Markup tool is active, click on the map and drag your mouse to draw a rectangle around any shapes you want to use for creating buffers. Once the shapes are selected, specify the symbology of your buffers (including buffer distance and unit of measurement) in the Markup Buffer menu (Fig. 3-10). You can choose to have the original shapes be displayed or removed after the buffer is created by selecting or un-selecting the checkbox at the bottom of the Markup Buffer screen.

Figure 3-10: Buffer Markup
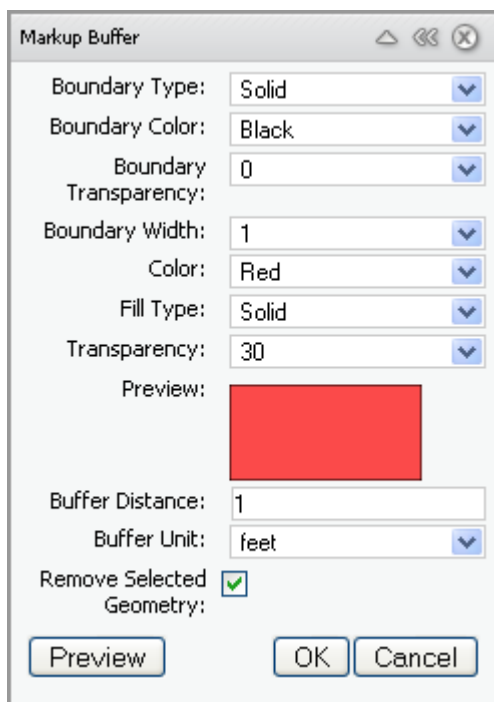


Erase Markup



The Erase Markup tool allows you to delete selective markup that you have made on the map. Select the tool and click once on any added text or graphic to erase the selected markup. To erase multiple graphics at once, you can click and drag the mouse to create a box around added text or graphics. Release the mouse when the box encloses the markup you want to erase. Note that when a section or portion of a graphic is enclosed within the eraser box, the entire shape is deleted.

Clear All Markup
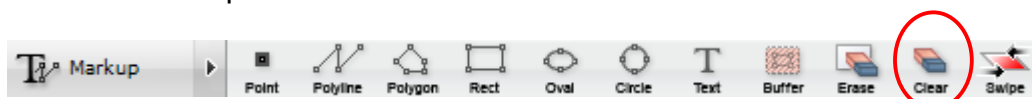


To quickly erase all existing markups from the map, select the Clear All Markup tool. A pop-up window will ask you if you want to delete all markups in your map. Press 'OK' to continue or 'Cancel' to abort the function.

Markup Swipe



In some cases, markups may obscure details in the map. To allow the user to temporarily roll a markup back to see what is underneath, the Swipe tool is provided.

To use, hold drag your mouse over a markup feature while holding down your mouse button.

**3e. The Project Toolbar (available only in the Secure Viewer)**



The Project Toolbar allows you to add your own GIS data to a map project, save your current map project using one of several methods, or open a previously created map project.
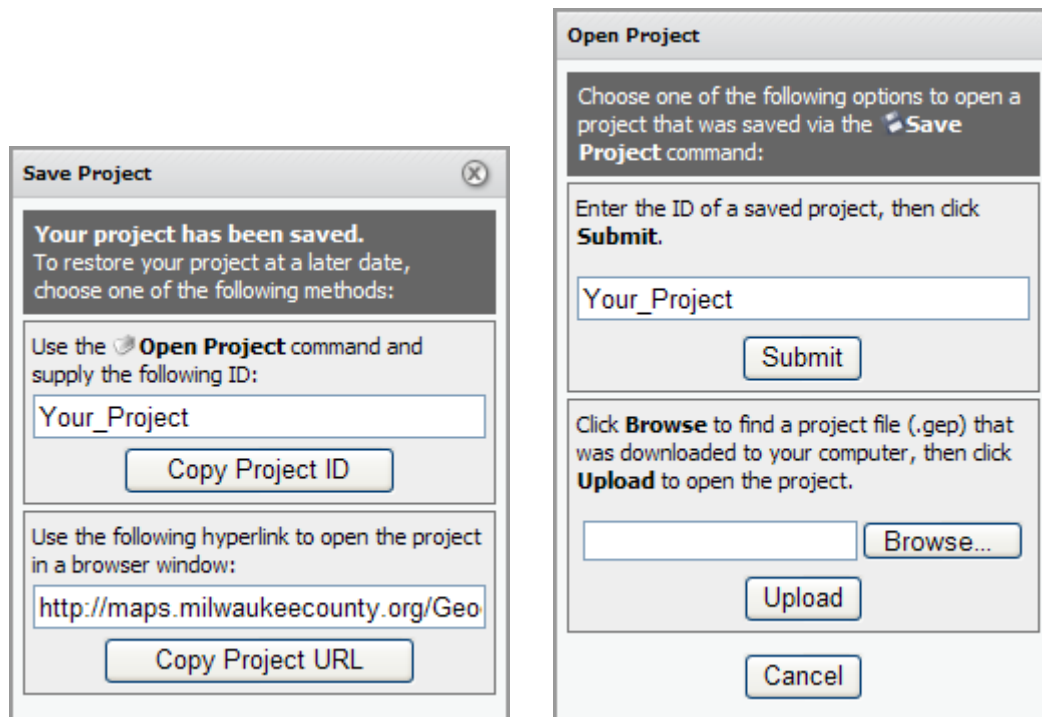
Save Project



The Save Project tool allows you to save a mapping session for later use or reference. Click the Save Project tool to save your current map viewer extent, layer configuration, and any added mark-up to be accessed at a later date. You can choose to copy the Project ID for future use, or download your project file and open it later using the Open Project tool. You can also copy the hyperlink provided to open your project in a browser window, as well as use the URL for emailing or adding to your map browser favorites (Fig. 3-10).  Once a project is saved, it cannot be overwritten (saved again with the same name).

Open Project



The Open Project tool allows you to open a previously saved map session. To reopen a map session, select the Open Project tool and locate your project in one of two ways. You can enter the Project ID of a saved project and hit 'Submit,' or you can click 'Browse' to search for a project that was downloaded to your computer, and then press 'Upload' to open the file (Fig. 3-11).

Figure 3-11: Save Project and Open Project Panels



Export



The Export tool in the Project toolbar provides a quick way to create a "snapshot" of the portion of your map that is visible in the Map Window, along with any markups. Select the desired image format and resolution, hold down your Ctrl key to avoid popup blocker interference, and click "Open Image." To save the exported image after it appears in a new browser window, right click on the image, select "Save Picture As," and save image to the location of your choice.

Figure 3-12: The Export Tool in the Project Toolbar
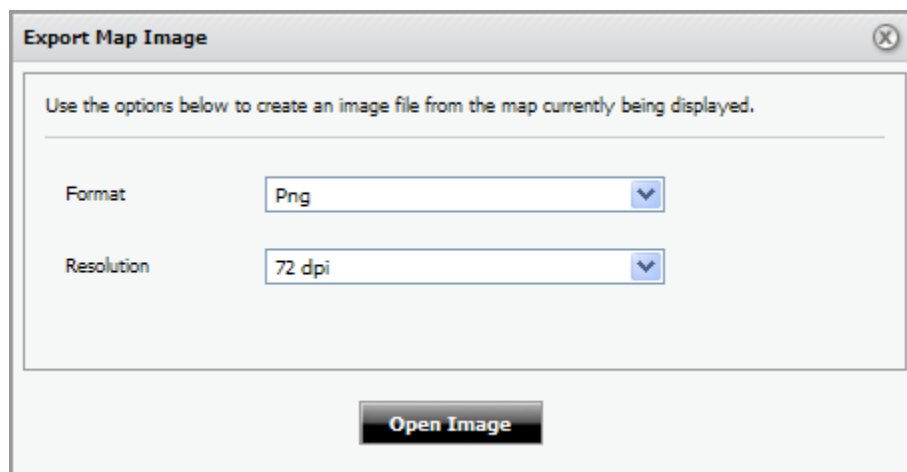
Bookmark



The Bookmark tool in the Project toolbar provides a quick way to return to the extent of a previously viewed area of interest. Enter a name for your area of interest and click the black button (Fig. 3-13). Any bookmarks added will appear in the "Previously defined bookmarks" box. To return to an extent, click the Bookmark tool and select one of the available bookmarks.

Figure 3-13: The Bookmark Tool in the Project Toolbar
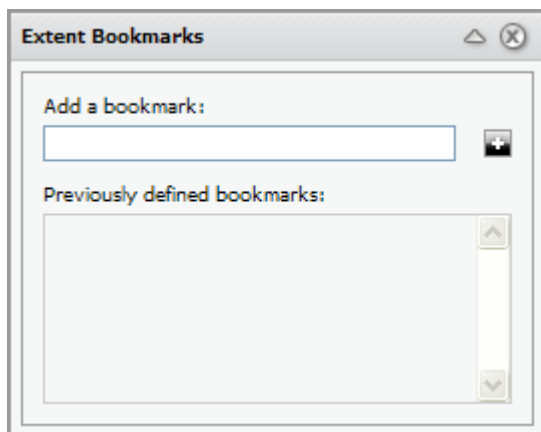


Upload Shapefile



At times, you may find it useful to view your own data along with the layers available in the *Interactive Mapping Service*. The Upload Shapefile tool allows you to upload a shapefile and display its features as a layer within your map. This layer will function the same way as other map layers, allowing you to perform all the same operations (navigating the layer, identifying and selecting features, viewing legend, etc.) as well as save the layer and all associated markup as part of a saved project. To use this function, select the Upload Shapefile tool from the toolbar. Next, fill in the requested information in the Upload Shapefile window that appears (Fig. 3-14), including the name and color of the new layer, along with the file paths for the three files that constitute a Shapefile (.shp, .dbf, .shx).

Figure 3-14: The Upload Shapefile Panel



## 3f. The Print Toolbar



The Print Toolbar creates a print version of a map using a preset layout, with an accurate scale and legend.

Print Map Template



The Print Map Template allows you to export a printable map using a variety of pre-defined sizes/formats and file types. In the example in Fig. 3-15, after selecting a template from the drop-down list ("8.5x11 Portrait"), you are presented with options for customizing your map: map document resolution, title & notes, desired output format, and scale. Clicking on "Export" will prepare your printable map document for download. When your document is ready, you will be prompted to download the file.

Fig 3-15: Print Map Template

Print Layout (Available only in the Secure Viewer)



To print an image of your map, select the Export tool. The 'Zoom To' drop-down menu allows you to select either the current map scale, the current map extent, or a standard map scale as the map area (Fig. 3-16). Choose the format you want for your map image and press 'Go.' An image of your map will be exported to a browser window, where it can be printed.

Fig. 3-16: Print Layout
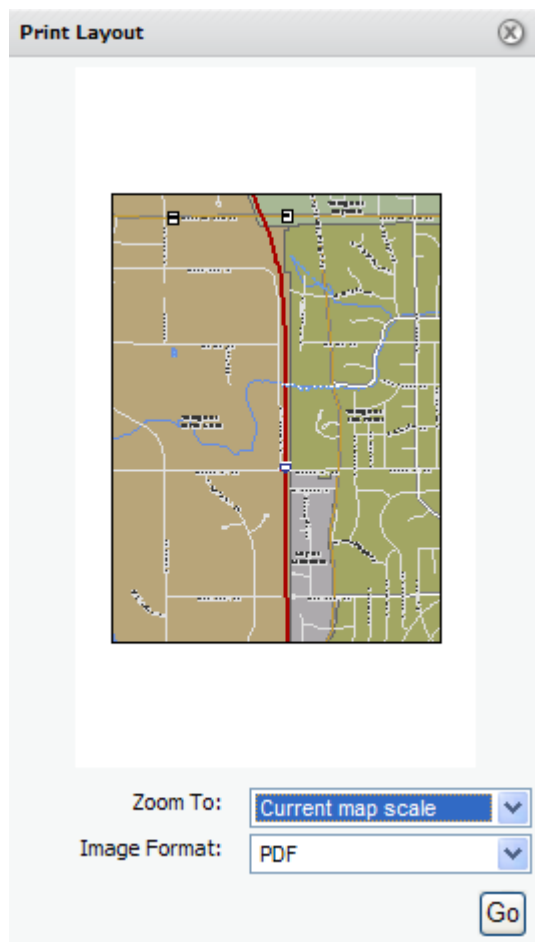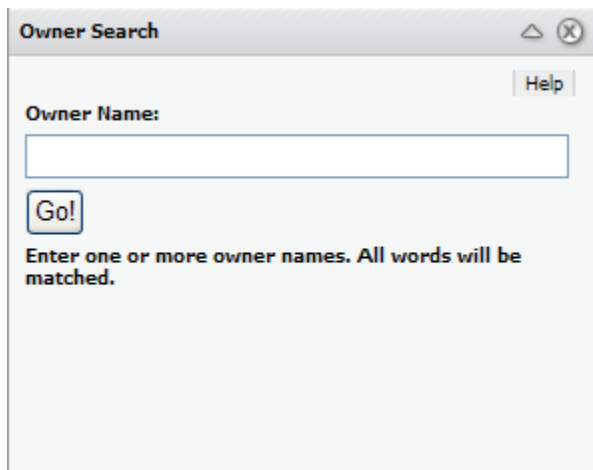


## 3g. The Search Toolbar



The Search Toolbar is used to locate land parcels on the map via owner name, address, or taxkey. After searching with any of the following tools, you'll find your results displayed in the Selection Results window (Figure 3-20).

Search for Parcels by Owner



The Owner Search tool searches for parcels based on the owner's name. Select the Owner Search tool from the Search toolbar. Type your search term into the Owner Name field in the Owner Search dialogue box (Fig. 3-17). Enter at least the owner's last name and click the Go button. Any parcel results for that search will now be selected in the Tax Parcels layer. The Selection Results window (Figure 3-19) will appear and allow you to request various reports based on the selected parcels.
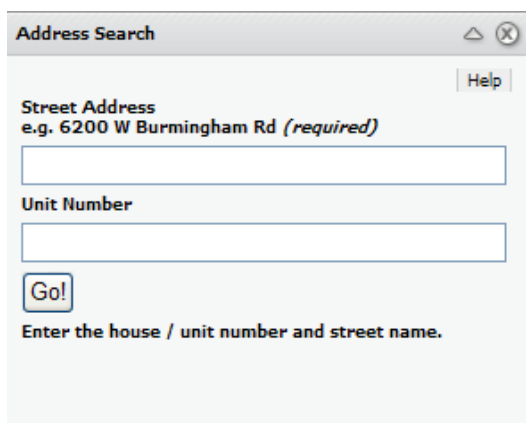
Figure 3-17: Owner Search Dialogue Box



Search for Parcels by Address



The Address Search tool searches for parcels based on the address of those parcels. Select the Address Search tool from the Search toolbar. Type the address you wish to search for in the Street Address field in the Address Search dialogue box (Fig. 3-18). Optionally, you may enter a unit number in the Unit Number field. Click the Go Button. Any parcel results for that search will now be selected in the Parcels layer. The Selection Results window (Figure 3-20) will appear and allow you to request various reports based on the selected parcels.

Figure 3-18: Address Search Dialogue Box

Search for Parcels by Tax Key



The Tax Key Search tool searches for and selects parcels by tax key. Select the Tax Key Search tool from the Search toolbar, type the tax key of interest (without dashes, no fewer that 7 characters, and no more that 10 characters) in the Tax Key field of the Tax Key Search dialogue box (Fig. 3-18) and click Go. The Selection Results window (Figure 3-20) will appear and allow you to take additional action with any selected parcel(s).
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Figure 3-19: Tax key Search Dialogue Box



## 3h. The Selection Results Window

Figure 3-20: The Selection Results Window
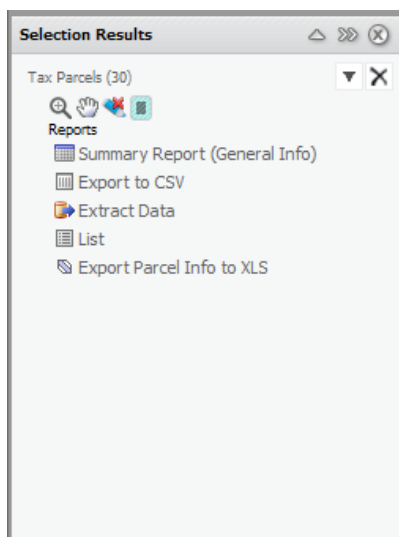
The Selection Results Window appears at the bottom of the Information Panel when features are selected from the active layer. The window provides several options for viewing and exporting the attribute data of selected features. The Summary Report option (Fig. 3-21) presents several ways to view the attribute data associated with selected features. The Summary Report Window is also presented when the Identify Tool (Navigation Toolbar) is used to query the attributes of a feature. The List option returns a simple table summarizing basic information about the selected features. Two ways to export and download attribute data of selected features are provided: an Excel spreadsheet (Export Parcel Info to XLS) or a comma-separated values file (Export to CSV). Also, the option to extract selected features into a downloadable shapefile or geodatabase feature class is provided (available only in the secure version of the *Interactive Mapping Service*).

Figure 3-21: Summary Report Option from the Selection Results Window
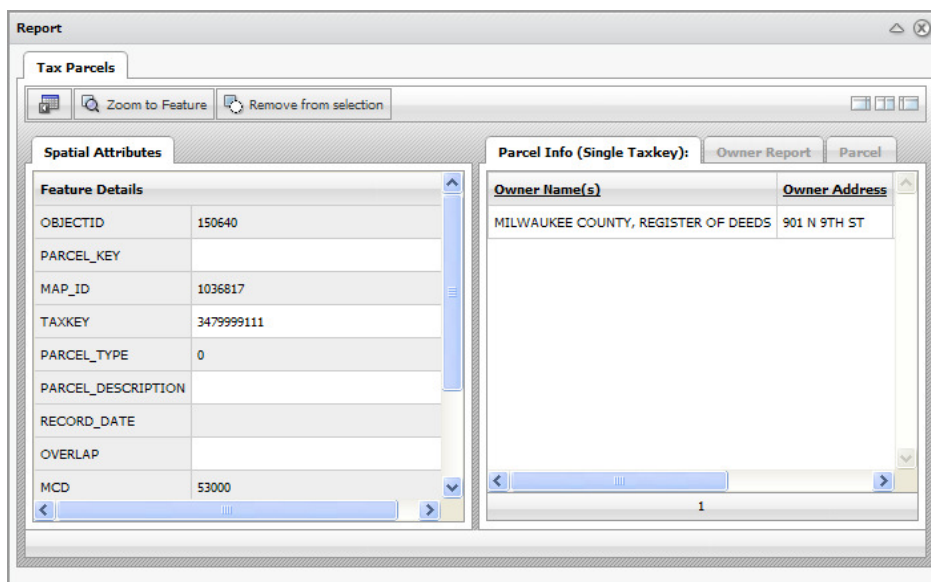
## 4) Exercises

### Exercise 4a. Generate a List of Owner Names and Addresses for a Group of Parcels

Your municipality's DPW is planning a sewer repair project; it is expected that nearby property owners will experience disruptions while the project is underway. You have been asked to notify those property owners whose parcels abut the street segment where the project is planned. In this exercise, you will take advantage of the *Interactive Mapping Service's* navigation (sections 2b and 3b), selection (section 3c), and data export (section 3h) capabilities.

- First, use the Jump to Extent tool (located in the lower left hand corner of the Map Window to zoom to West Milwaukee, where our hypothetical public works project is being planned along S. 54h St. between W. Mitchell St. to the north and W Burnham St. to the south) to select "Village of West Milwaukee" from the drop-down list, then click the black arrow button.

- Now use the Overview Map and the navigation toolbar's zoom and pan tools (or, if you prefer, the Navigation Controls located in the upper left hand corner of the Map Window) to locate and center the Map Window on the segment of S. 54th St. that we are interested in.

- Next, ensure that the Tax Parcels layer in the Layer List is visible and active (refer to section 2c for more information). Access the Selection toolbar and practice using all six selection tools (point, polyline, polygon, rectangle, oval, or circle) to create a selection set of all parcels that fall along S. 54th St.

- When you use one of the selection tools when parcels have already been selected, a window appears near the bottom of the Information Panel to the left of the Map Window. Take a moment to familiarize yourself with the options presented there for replacing, combining, intersecting, or removing features in selection sets. For more information on selection results options and selection sets, see section 3c.

- Regardless of the selection method you used, you should have 30 parcels in your selection set. The Selection Results Window that appears (near the bottom of the Information Panel to the left of the Map Window) will show the number of parcels in your selection set, additional tools for working with your selection set, and options for viewing and exporting data associated with the selected parcels. Click "Export Parcel Info to XLS," then "Download" in the box that appears next (to avoid popup blocker issues, hold down the control key when clicking "Download"). The resulting Excel spreadsheet presents a "Parcel Information Report" worksheet with owner name and address, as well as other details, for each of the 30 selected parcels.

### Exercise 4b.  Add Markups to an Area of Interest

In Exercise 4a we located an area where a hypothetical project is being planned, selected all parcels that will be affected by that project, and exported information about those parcels. You may find it useful to add to the map some of your own information

about the project. In this exercise, we will use the Markup Tools to draw a boundary around the project area and to add some notes about the project. For more about markups, see section 3d.

- First, return to the project area described in Exercise 4a if necessary. Next, access the Markup toolbar and select the polygon markup tool. Notice how the markup tools look and function much like the tools provided in the Selection toolbar.

- When you select a markup tool, a window appears near the bottom of the Information Panel to the left of the Map Window. If you want your markup shape's appearance to differ from the default style, change the style in this window before drawing the markup shape on the map. Take a moment to familiarize yourself with the many boundary color and fill style options available in this window.

- Draw a boundary around the project area that encompasses the 30 parcels that you identified in Exercise 4a. To begin the markup shape, click on the map where you wish to begin, click to add additional vertices or corners to you shape, ad double click to finish the shape. If you wish, practice using the other markup shapes that are available. If you want to start over, the Clear tool in the Markup toolbar allows you to remove all markups added to the map, while the Erase tool allows you to selectively remove markups.

- Next, practice using the Text markup tool to add a note or two about the hypothetical sewer repair project. The first click determines where the text will be placed. You might want add the project's start date, name, manager, etc. (it's entirely up to you). Notice the text appearance options that become available when the Text tool is selected.

- You will now save your map as a project so you can return to it for Exercise 4c. Access the Project toolbar, select Save, and give your map a unique name (or Project ID) by clicking Rename, or accept the default name. Click Continue to save you map project. Notice that a unique Project URL (or link) was created using the name you gave your project:

**PROJECT ID:**  YOUR_PROJECT
**Project URL:**  http://maps.milwaukeecounty.org/Geocortex/Essentials151/Viewer.aspx?Project=YOUR_PROJECT

Keep in mind that you will need to remember the name you gave to your map project to return to it later; click "Copy Project ID" or "Copy Project URL" and paste these into Notepad or Word to aid you in remembering your map project's name.


## Exercise 4c.  Return to and Share a Map Project

In Exercise 4b, you added your own markups to create a customized sewer repair project map. To retain the properties of your map (the markups you added, the map's extent or area of interest, etc.) for later use by you or someone else, the *Interactive Mapping Service* allowed you to save your map as a project. In this exercise, you will return to your map project and cover ways in which another person can view your map project on their own web browser.

- First, exit and reopen the *Interactive Mapping Service*.  Access the Project toolbar that you used to save your map project in Exercise 4b.  Click the Open tool and enter the name you gave your map in Exercise 4b.  Or, if you saved your project's URL, paste it into your browser's address bar and reenter your login information.

- If you wish to share your map project, simply forward your project's name (Project ID) or the project's URL to anybody with access to the *Interactive Mapping Service's* secure viewer.  Another person can access your map project using its Project ID via the Project toolbar's Open tool or by hyperlinking to your project's URL.

## Exercise 4d.  Print a Customized Map

In exercise 4c, you returned to a map project that you saved earlier using the *Interactive Mapping Service*'s Project tools.  In this exercise, you will learn how to print your map project.

- First, access the Print toolbar and click the Print tool.  Select one of the three map layouts choices (Templates) that are available: letter-size portrait, letter-size landscape, or tabloid-size landscape.

- Next, you are presented with output format, resolution, and scale options.  Output format may be PDF, rich-text format (RTF), or TIFF image.  After making a selection for each of these, add a title and notes (if you desire), and click Export.  Another window will appear.  While holding down the CTRL key to bypass your popup blocker, click Download, then Open to immediately view the exported map, or select Save if you want to save the exported file to a directory.